Calcified Tissue

INTERNATIONAL

Volume 45, 1989

Editor-in-Chief

L. V. Avioli
Washington University School of Medicine, The Jewish Hospital of St. Louis,
216 South Kingshighway, St. Louis, Missouri 63110, USA

Associate Editors

K. Hruska
St. Louis, Missouri

W. Peck
St. Louis, Missouri

M. P. Whyte
St. Louis, Missouri

Section Editor: Molecular and Cellular Biology

J. D. Termine
Bethesda, Maryland

Editorial Advisory Board

H. Fleisch
Bern, Switzerland

J. N. M. Heersche
Toronto, Canada

T. Fujita
Kobe, Japan

T. J. Martin
West Heidelberg, Australia

Editorial Board

C. Anderson
London, Ontario

J. P. Bonjour
Geneva, Switzerland

A. Boskey
New York, New York

R. Bouillon
Leuven, Belgium

J. S. Brand
Rochester, New York

E. Canalis
Hartford, Connecticut

M. K. Drezner
Durham, North Carolina

E. Eanes
Bethesda, Maryland

S. Epstein
Philadelphia, Pennsylvania

C. Gennari
Siena, Italy

M. Glimcher
Boston, Massachusetts

F. H. Glorieux
Montréal, Québec

J. Glowacki
Boston, Massachusetts

M. P. M. Herrmann-Erlee
Leiden, The Netherlands

W. Jee
Salt Lake City, Utah

M. Kleerekoper
Detroit, Michigan

S. M. Krane
Boston, Massachusetts

R. Lindsay
West Haverstraw, New York

S. C. Manolagas
Indianapolis, Indiana

G. Mundy
San Antonio, Texas

C. Nagant de Deuxchaisnes
Brussels, Belgium

B. E. C. Nordin
Adelaide, Australia

K. Olgaard
Copenhagen, Denmark

B. R. Olsen
Boston, Massachusetts

P. Osdoby
St. Louis, Missouri

T.R. Overton
Edmonton, Alberta

P. Price
La Jolla, California

L. G. Raisz
Farmington, Connecticut

H. Rico Lenza
Marid, Spain

G. Rodan
Westpoint, Pennsylvania

J. Rosenbloom
Philadelphia, Pensylvania

G. V. Segre
Boston, Massachusetts

C. Sempos
Hyattsville, Maryland

D. Simmons
Galveston, Texas

F. R. Singer
Los Angeles, California

M. Sobel
Bethesda, Maryland

T. Suda
Tokyo, Japan

S. L. Teitelbaum
St. Louis, Missouri

R. S. Weinstein
Augusta, Georgia

S. Wientroub
Tel Aviv, Israel

Springer International

The exclusive copyright for all languages and countries, including the right for photomechanical and any other reproductions, also in microform, is transferred to the publisher.

The use of registered names, trademarks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

Printed in the United States of America.
© by Springer-Verlag New York Inc. 1989.

Author Index

Alaranta, H. 372
Anderson, J. J. B. 265
Andreassen, T. T. 292
Arsenault, A. L. 111
Avioli, L. V. 4
Avioli, L. V. 54
Avioli, L. V. 193
Azria, M. 7

Bagi, Č. 342
Bain, S. D. 41
Bak, B. 292
Baksi, S. N. 314
Beertsen, W. 104
Bell, N. H. 12
Bennett, R. 198
Bjurholm, A. 227
Blumenthal, N. C. 81
Boden, S. D. 324
Bolander, M. E. 74
Bolander, M. E. 324
Bortz, A. D. 265
Bracker, M. 288
Brown, P. 137
Brown, R. A. 260
Burger, E. H. 342
Byers, P. D. 260

Cabranes, J. A. 71
Campbell, A. A. 122
Cano, R. P. 203
Carstens Jr., J. H. 4
Castro, N. 58
Chambers, T. J. 378
Chan, D. E. 318
Checovich, M. M. 281
Chole, R. A. 318
Cintrón, M. 360
Ciotti, G. 257
Ciotti, G. 331
Civitelli, R. 54
Civitelli, R. 193
Closs, E. I. 232
Colletti, L. A. 12
Collins, B. 157
Compston, J. E. 15
Conn, K. M. 74
Cosma, V. 81
Couwenhoven, R. I. 367
Croucher, P. I. 15

Daculsi, G. 95
Daley-Yates, P. T. 198
Dann, L. M. 360
Davis, C. 367
Davoli, L. 257
Davoli, L. 331
de la Piedra, C. 58
Diaz Curiel, M. 58
Dickson, I. R. 157

Ebrahimpour, A. 122
Edwards, J. 12
Eisenmann, D. R. 298
Enomoto, M. 305
Erfle, V. 232
Erroi, A. 257
Eskola, A. 372

Farley, J. R. 214
Fedde, K. N. 193
Filburn, C. R. 251
Fincham, A. G. 243
Fisher, L. W. 74
Fogelman, I. 198
Forwood, M. R. 47
Frost, H. M. 1
Frost, H. M. 63
Frost, H. M. 131
Frost, H. M. 134
Furukawa, Y. 375

Galan, F. 203
Gärdsell, P. 327
Garrahan, N. J. 15
Garrido, M. 203
Gennari, C. 193
Girasole, G. 257
Girasole, G. 331
Glimcher, M. J. 157
Glimcher, M. J. 165
Goehl, T. 157
Gomez-Castresana, F. 71
Gordon, L. 12
Granovsky, M. 88
Gregoire, M. 20
Guggino, S. 251

Hahn, T. J. 27
Hall, S. L. 214
Hall, T. J. 378
Halstead, L. R. 27
Halstead, L. R. 193
Hancock, R. L. 265
Harter, J. 193
Hernandez, E. R. 71
Hernandez, E. R. 285
Herold, R. 88
Heughebaert, M. 20
Heydemann, A. 324
Hruska, K. A. 54
Hu, Y. 243
Hügel, U. 255

Iida-Klein, A. 27
Ituarte, E. A. 27
Ituarte, H. G. 27

Johnell, O. 327
Joyce, M. E. 324

Kaňka, J. 273
Karas, J. G. 137
Karpinski, E. 54
Kerebel, B. 20
Kerr, E. 288
Kinoshita, A. 305
Kiratli, B. J. 281
Komoda, T. 173
Kors, N. 153
Kragstrup, J. 337
Kreicbergs, A. 227
Kumagai, H. 251
Kuwahara, M. 375

Landesman, R. 348
Lanyon, L. E. 34
Lazarus, C. 198
Leboy, P. S. 182
Lefteriou, B. 165
LeGeros, R. Z. 95
Lessig, H. J. 142
Levine, S. 81
Livne, E. 232

Mantovani, A. 257
McDonald, S. A. 182
Mellish, R. W. E. 15
Melsen, F. 337
Melton III, L. J. 263
Meltzer, M. 142
Menanteau, J. 20
Menšík, J. 273
Merke, J. 255
Metsäranta, M. 146
Mitre, D. 95
Miura, R. 375
Mizunashi, K. 375
Montoya, M. J. 203
Moruno, R. 203
Mosekilde, L. 337
Murray, T. M. 354

Nagata, A. 173
Nancollas, G. H. 122
Nawrot, M. 255
Newbrey, J. W. 41
Newbrey, J. W. 314
Nilsson, B. E. 327
Nilsson, J. Å. 327

Oliver, B. 324
Orly, I. 20
Oshima, O. 182

Pacovský, V. 273
Palmieri, G. M. A. 137
Palummeri, E. 331
Pan, H.-O. 305
Pang, P. K. T. 54
Parker, A. W. 47
Passeri, M. 257
Passeri, M. 331
Pavlova, Z. 243
Pead, M. J. 34
Pedrazzoni, M. 257
Pedrazzoni, M. 331
Perez, L. 122
Pietschmann, P. 209
Pioli, G. 257

Pioli, G. 331
Pitcock, J. A. 137
Pohjolainen, T. 372
Pospíchal, J. 273
Prabhakar, B. S. 74
Presl, J. 273

Rao, L. G. 354
Rapado, A. 58
Reddi, A. H. 348
Reid, I. R. 63
Resch, H. 209
Rey, C. 157
Rico, H. 71
Rico, H. 285
Ritz, E. 255
Robey, P. G. 74
Robinson, B. W. 111
Roen, L. J. 137
Rosenbloom, J. 88

Sacktor, B. 251
Sakagishi, Y. 173
Sakamoto, H. 251
Salama, A. H. 298
Saltman, P. 288
Sandberg, M. 146
Sansoni, P. 257
Sartoris, D. 288
Schmidt, J. 232
Schreiber, V. 273
Schultzberg, M. 227
Scott, K. S. 360
Shapiro, I. M. 182
Shary, J. 12
Shijie, Z. 337
Shirai, E. 305
Siegel, J. A. 142
Silbermann, M. 232
Slātis, P. 372
Slavkin, H. C. 243
Smesko, S. A. 122
Smith, E. L. 281
Snead, M. L. 243
Snead, M. L. 367
Soini, J. 372
Štěpán, J. J. 273
Stern, P. H. 222
Stewart, P. J. 222
Strause, L. 288
Suzuki, F. 305
Szabo, A. 255

Taguchi, K. 375
Takigawa, M. 305
Tallroth, K. 372
Tarbaux, N. M. 214
Termine, J. D. 74
Termine, J. D. 146
Torres, R. 58
Tuan, R. S. 182
Tylavsky, F. A. 265

van Rooijen, N. 153
Vazquez, A. 203
Vedi, S. 15
Vuorio, E. 146

Wahner, H. W. 263
Wallach, S. 4
Watkins, B. A. 41
Wesselink, P. R. 104
Willvonseder, R. 209
Wronski, T. J. 360
Wu, L. 54

Yoshinaga, K. 375
Young, M. F. 146
Yugari, Y. 305
Yumita, S. 375

Zaki, A. E. 298

Subject Index

Acid/Alkaline phosphatase, 273
Acute osteoporotic spine fractures, 209
Adenylate cyclase, 354
Age changes, 292
Aging, 360
Albumen, 367
ALP activity, 173
Ameloblasts, 298
Amelogenin, 88, 243, 367
Amino acid, 193
Anion exchange, 378
Antler, 314
Apatite, 95
Apatite crystals, 111

Biomaterial, 20, 95
Biotin, 41
Bisphosphonate, 104
Bone, 47, 146, 265, 273, 292, 314, 318
Bone densitometry, 142
Bone formation, 214
Bone loss, 15, 203
Bone matrix, 348
Bone mineral, 157
Bone mineral content, 58, 209, 281, 327
Bone mineral density, 12, 281, 288
Bone morphometry, 285
Bone radiogrametry, 285
Bone resorption, 222, 251, 378
Bone turnover, 331, 360

^{45}Ca, 193
Ca-45 uptake, 173
Ca^{2+}-Mg^{2+} ATPase, 298
Calcemic hormones, 314
Calcification, 342
Calcified tissue, 227
Calcitonin, 137, 209, 331
Calcitonins, 372
Calcium, 354
Calcium channels, 54
Calcium phosphate, 95
Calcium oxalate, 122
Calmodulin, 173
cAMP, 173
Carbonate apatite, 157
Carbonate, 157
Cartilage, 146
cDNA, 367
Cell culture, 20
Cell proliferation, 232
Cementum, 165
Cerebral disorder, 327
Chicks, 41
Cobalt, 298
Collagen, 146
Collagen type I, II, X, 182
Cortical bone remodeling, 337
Crystal growth kinetics, 122
Cyclosporines, 222
Cytosolic Ca homeostasis, 193
Cytosolic Ca^{2+}, 251
Cytosolic calcium concentration, 54

Demineralization, 227
Density, 314
Dentin, 111
2 deoxy-D-glucose, 27
Diabetes mellitus, 71, 331
Diabetic osteopenia, 71
Dietary calcium, 265
Diffusion chamber, 348
Dissolution, 95
Dual photon absorptiometry, 281, 288

Early postmenopause, 203
Electron spectroscopic imaging, 111
Enamel, 243
Enamelin, 88, 367
Enameloid, 88
Endochrondral bone formation, 348
Endothelial cells, 305
Epitope conservation, 74
Established cell lines, 305
Estrogen, 273, 314
Evolution, 88
Exercise, 12
Extractable calcitonin, 203

Falls, 327
Fatigue microdamage, 47
FBR osteosarcoma virus, 232
Femur, 142
Fluoride, 214, 337
Fourier transform infrared spectroscopy, 157
Fracture, 292
Fracture healing, 292
Fractures, 137, 142
Fragility fracture, 327

Gallium, 81
Gene expression, 182
Gerbil, 318
Glycosylated phosphoproteins, 165
Growth cartilage, 182
Growth cartilage cells, 305
Growth inhibitor, 305

Half-life, 348
Hard tissue, 367
Healthy lifestyle, 265
Heredity, 265
Hip, 12
Histomorphometry, 314, 337
Human, 243
Human calcitonin, 214
Human fibroblasts, 193
Hydroxyapatite, 20, 81, 122
Hydroxyproline, 273

Iliac bone biopsies, 337
Immunohistochemistry, 227
Immunoreactive calcitonin, 203
Implantation, 20
In situ hybridization, 182
In vitro, 232
Indomethacin, 34
Inhibition, 81
Insulin, 27
Insulin-dependent, 331
Interleukin-1, 222, 257
Intermittent compression, 342
Intracellular Ca, 193
Intracellular diphosphonates, 153

L-lysine, 193
Liposomes, 153
Load-related adaption in bone, 34
Lumbar spinal stenosis, 372

Macrophage subpopulations, 153
Maturation, 298
Mechanical force, 318
Mechanical properties, 47
Menopause, 273
MIBT, 15
Microradioscopy, 285
Mineralization, 20, 182, 232, 298
Mineralization inhibitors, 122
Mineralization nucleators, 122
Monoclonal antibodies, 74
Monocytes, 255
Mononuclear cells, 257

Neuropeptides, 227
Neurotransmitter, 251
Noninsulin dependent, 331
Norethisterone, 273
Nucleation, 81

Odontogenic cells, 367
$1,25(OH)_2D_3$ (rat organs), 173
Organ culture, 342
Osteoblast, 71, 354
Osteoblast-like, 27
Osteoblastic cells, 54
Osteoblasts, 305, 318
Osteocalcin, 71, 273, 331
Osteoclasts, 318, 378
Osteoinductive Potential, 348
Osteonectin, 74, 146, 182
Osteopenia, 142, 360
Osteoporosis, 58, 137, 142, 273, 337
Ovariectomy, 360

P-32 uptake, 173
Paget's disease, 257
Parathyroid hormone, 222
Periodontal ligament, 104
Phloridzin, 27
Phorbol ester, 173
Phosphoproteins, 165
PMA, 354
Postmenopausal osteoporosis, 203
Premenopausal women, 265
Prostaglandin precursors, 41
Prostaglandins, 34
Proteoglycans, 342
Proximal tibia, 281

PTH, 331, 354
Purinergic receptor, 251

Quantitative bone histomorphometry, 360
Quantitative dual energy radiographic absorptiometry, 288

Radius, 12
Rat, 298
Receptor regulation, 255
Reindeer, 314
Renewed bone modeling, 34
Resorption depth, 15

Salmon calcitonin, 214
Selected-area dark field imaging, 111
Sequence, 243
Serine phosphate, 165
Sodium fluoride, 71
Solubility, 81
SPARC, 146
Spine, 12, 142
Spleen, 153

Tartrate-resistant acid phosphatase, 58
Tetracycline labeling, 337
Threonine phosphate, 165
Tibiotarsus, 41

Tooth ankylosis, 104
Tooth enamel, 111
Tooth resorption, 104
Trabecular bone, 15
Trabecular bone volume, 137
Transformation, 232

Ultrastructure, 95, 111
UMR-106-01 cell, 27

Vitamin D, 137, 255
Vitamin D receptor, 255